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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,465	01/15/2004	Sriram Ramani	1856-37500 (#9894.0-02)	5864

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EXAMINER

VANOY, TIMOTHY C

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/758,465	Applicant(s) RAMANI ET AL.	
	Examiner Timothy C. Vanoy	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 37-44 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,7-21,24,26-33,35 and 36 is/are allowed.
- 6) ☒ Claim(s) 3 and 4 is/are rejected.
- 7) ☒ Claim(s) 5,6,22,23,25 and 34 is/are objected to.
- 8) ☒ Claim(s) 1-44 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-36 (group I), drawn to a process, classified in class 423, subclass 573.1+.
- II. Claims 37-44 (group II), drawn to an apparatus, classified in class 422, subclass 129+.

The inventions are distinct, each from the other, because the inventions set forth in claims 1-36 (group I) and claims 37-44 (group II) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used for another and materially different process such as a process for removing hydrocarbon contaminants out of a waste gas.

Because these inventions are distinct for the reasons given above and claims 1-36 (group I) and claims 37-44 (group II) have acquired a separate status in the art as shown by their different classification; the search required for the claims of group I is not required for the claims of group II, and the claims of group I (claims 1-36) and the claims of group II (claims 37-44) have acquired a separate status in the art because of their

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recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Ms. Carol Mintz, applicants' attorney, on Oct. 26, 2005 a provisional election was made with traverse to prosecute the invention of the process, claims 1-36 (group I). Affirmation of this election must be made by the applicants in their reply to this Office action. Claims 37-44 (group II) are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

- a) On pg. 6 ln. 4, the status of "09/625,710", "10/024,679" and "10/024,167" should be updated.
- b) On pg. 24 lns. 9 and 10, the status of "09/625,710" and "10/317,936" should be updated.

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- c) On pg. 26 ln. 4, the status of "10/024,167" should be updated.

Claim Objections

- a) There is no antecedent basis in claim 3 for the "said initial feed gas mixture" mentioned in claims 5 and 6.
- b) There is no antecedent basis in claim 3 for the "said initial catalyst portion" mentioned in claim 6.
- c) Claim 22 is improperly dependent on claim 21 because there is nothing in claim 21 mentioning a lanthanide element. It appears that claim 22 should be dependent on claim 20.
- d) Claim 23 is improperly dependent on claim 21 because neither claims 17 or 21 mention samarium oxide.
- e) Claim 25 is improperly dependent on claim 21 because neither claims 17 or 21 mention samarium oxide.
- f) Claim 34 should be dependent on claim 33 (not claim 333).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) In claim 3 Ins. 5-8, it is not clear how a gas containing less than the stoichiometric amount of oxygen can convert all of the hydrogen sulfide in the first feed gas. Intuitively, it appears that only a portion of the hydrogen sulfide in the first feed gas would be converted.

Similarly, in the last step of claim 3 it is not clear how a less than stoichiometric amount of oxygen can convert all of the unreacted hydrogen sulfide in the second stage product gas stream. If all of the unreacted hydrogen sulfide is converted, then how can there be any unreacted hydrogen sulfide in the third stage product gas stream?

b) Claim 3 mentions a first feed gas stream. Claim 4 mentions an initial feed gas mixture. It is not clear if these are the same streams. If these two are the same streams, then claim 4 needs to be amended to use the same terminology of claim 3.

Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

U. S. Patent 6,403,051 describes a process for the partial oxidation of hydrogen sulfide into elemental sulfur (please see col. 5 Ins. 53-58) by passing a hydrogen sulfide-containing gas and an oxygen-containing gas into a catalytic device which promotes the partial oxidation of hydrogen sulfide into elemental sulfur (please see col. 5 Ins. 21-58 and also note that hydrogen sulfide is fed through feature 12 illustrated in

fig. 1, air or oxygen is fed through feature 16 illustrated in fig. 1 and the feed gases contact the catalytic mass illustrated as feature 24 in fig 1: please see col. 5 Ins. 21-24 and also Ins. 28-30).

U. S. Patent 6,403,051 also describes using a catalyst temperature of 900 to 1,500 °C (please see claim 9 in U. S. Patent 6,403,051), in a manner that does not distinguish from the catalyst temperatures reported in applicants' claims 2, 10 and 11.

U. S. Patent 6,403,051 also describes using a catalyst that may be Pt, Rh, Ni, Pd, Ir, Pt/ZrO₂ and Pt/Al₂O₃ that may be in the form of a gauze or a monolith (please see col. 5 Ins. 1-20), in a manner that does not distinguish from the catalyst limitations set forth in at least applicants' claims 16, 17, 18 and 33.

U. S. Patent 6,403,051 also describes a feed gas/catalyst contact time that is less than 10,000 microseconds, in a manner that does not distinguish from the contact time limitations set forth in applicants' claim 13.

While U. S. Patent 6,403,051 describes the same basic process for partially oxidizing hydrogen sulfide into elemental sulfur via contact with the same catalyst at the same temperatures and at the same length of time set forth in the applicants' claims, none of the claims have been rejected under either 35USC102 or 35USC103 because neither U. S. patent 6,403,051 or any of the other references of record teach or suggest the supply of the oxygen-containing gas into the catalyst in at least two increments to at least two catalyst regions, in the manner set forth in the applicants' independent claim 1.

The following references, which are indicative of the state of the art, are made of record:

U. S. Patent Application US 2002/0098145 A1 disclosing a process for the selective oxidation of hydrogen sulfide into elemental sulfur;

U. S. Patent 6,946,111 B2 disclosing a short contact time catalytic partial oxidation of hydrogen sulfide;

U. S. Patent 6,800,269 B2 disclosing a short contact time catalytic sulfur recovery process;

U. S. Patent 6,780,392 disclosing a method for the afterburning of hydrogen sulfide gas in a combustion chamber, and

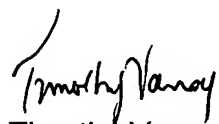
U. S. Patent 4,596,699 disclosing a method for obtaining sulfur from hydrogen sulfide in which the gas is burned with air under substoichiometric conditions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Timothy Vanoy
Patent Examiner
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